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ITALIAN GUIDE SPECIFICATIONS

Use for ITALIAN projects only

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SECTION 02222

EXCAVATION, TESTING, BACKFILL, REMOVAL AND TREATMENT OF PETROLEUM CONTAMINATED SOIL AND WATER

02/03

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NOTE: This guide specification is issued by the Atlantic Division, Naval Facilities Engineering Command for regional use in Italy.

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Comments and suggestion on this specification are welcome and should be directed to the technical proponent of the specification. A listing of technical proponents, including their organization designation and telephone number, is on the Internet.

Use of electronic communication is encouraged.

Brackets are used in the text to indicate designer choices or locations where text must be supplied by the designer.

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PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

U.S. DEPARTMENT OF DEFENSE (DOD)

DOD-FGS-Italy (1994) Environmental Final Governing Standards for Italy

ITALIAN LAWS AND NORMS (D.M.)(LAW)(CIRC.)

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NOTE: Italian laws and normatives are the

legislative regulations and decrees issued by the Italian government in the form of laws, norms, decrees, circulars, and letters. These Laws and Decrees concur together with Norms and Standards in forming the governing directives for construction.

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D.L. 626	(19 September 1994) Realization of CEE requirements for improving safety and health of workers on work sites
D.L. 22	(5 February 1997) Accomplishment of instructions 91/156/CEE regarding wastes, 91/689/CEE regarding hazardous wastes and 94/62/CE regarding packaging and packaging wastes
Law 426	(9 December 1998) New interventions in environmental field (G.U. n. 291 - 14/12/1998)
D.M. 471	(25 October 1999) Regulation containing principles, procedures and methods for enhancing safety, decontamination and environmental restoration of polluted sites, in accordance with Art. 17 of legislative decree 5/2/1997 n. 22 and subsequent modifications and supplements (Ordinary Supplement n. 218/L to G.U. n. 293 15/12/1999)
D.L. 152	(11 May 1999) Rules for waters protection against pollution

ITALIAN NATIONAL ASSOCIATION FOR UNIFICATION OF STANDARDS (UNI)

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NOTE: A UNI Norm is a technical normative recognized as Italian Law, submitted by a private organization "Ente Nazionale Italiano di Unificazione" for Italy and is available only in the Italian language. It is the National Standard.

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UNI 7546/2	(1976) Symbols for safety signs - Direction to first aid equipment
UNI 10667-11	(2000) Recycled plastic materials - Polyethylene and ethylene copolymers from agricultural and horticultural films to be used for general purposes - requirements and test methods

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (USEPA)

EPA SW-846	1986 Test Methods for Evaluating Solid Waste (Physical/Chemical Methods)
EPA 600/4-79-020	1983 Methods for the Chemical Analysis of Water and Wastes

1.2 DEFINITIONS

1.2.1 Excavated Soil Reused as Fill on Site

On site soils that meet the requirements for soil materials specified in Section 02315, "Excavation and Fill" may be used on-site as fill material in these excavations.

1.2.2 On-Site Petroleum Contaminated Soil

On-site soils failing the TCLP (toxicity characteristic leachate procedure) tests shall be considered hazardous waste and shall be disposed of at a Hazardous Waste Treatment Facility off site as specified herein. If the on-site soil contains greater than 50 ppm or more of TPH (total petroleum hydrocarbons) and doesn't fail the TCLP test the soil may be approved for permitted sanitary or industrial landfills equipped with liners and leachate collection system or an approved TPH incineration facility off site in accordance with Italian regional and local regulations.

1.2.3 On-Site Petroleum Contaminated Water

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NOTE: Concentration admissible limit values in soils and subsoil, and in the underground water, are shown in D.M. 471, Attachment 1, Table 3. The designation "ug/l" stands for "microgram per liter (0.000001 grams/liter)".

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Water from dewatering operations which fails the TCLP tests shall be considered hazardous waste and shall be disposed of at a hazardous waste treatment facility. Water with more than 1 ug/l of benzene, 15 ug/l of toluene, 50 ug/l of ethylbenzene, and total xylenes exceeding 10 ug/l and that doesn't fail the TCLP test, shall be considered contaminated and shall be treated for the contamination prior to disposal at an industrial waste water treatment plant. In any case waters external to site shall be protected within the limits set by D.L. 152.

1.3 DESCRIPTION OF WORK

Excavate, sample, and test the identified contaminated soil as indicated and specified. Containerize, sample and test all water from dewatering operations before disposal. Coordinate work of this section with definitions and requirements of Section 01575, "Temporary Environmental Controls," [Section 02115, Removal and Disposal of Underground Storage Tanks,"] [Section 02220, "Site Demolition,"] [and] [Section 02315,

"Excavation and Fill."]

1.3.1 Existing Conditions

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NOTE: Concentration admissible limit values in soils and subsoil, and in the underground water, are shown in D.M. 471, Attachment 1, Table 1

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Soil located within the area identified as "Contamination Area" on sheet [____] of the plans has been determined to be contaminated with [fuel oil products] [_____]. Total Petroleum Hydrocarbons were detected in the contamination area during a subsurface exploration in [_____]. The following list primary contaminants of concern:

Soil	Maximum Concentration in mg/kg
TPH	[____]
[____]	[____]

The [report] [descriptive pages] attached to the end of this specification section summarize the laboratory test procedures and results of environmental soil testing performed in the area. In accordance with the [Station] [and] [local] approved Corrective Action Plan for the contaminated area, all soil excavated within the contamination area may be re-used as backfill in the excavation where it was encountered if the soil is determined suitable for backfill as specified herein. If the excavated soil is not suitable for backfill (cannot be compacted or does not meet the requirements of section 02315, "Excavation and Fill"), it shall be transported to [the "Soil Stockpile Area"] [____]. At [the stockpile area] [____] the soil shall be tested and disposed of in accordance with the requirements specified herein. During excavation within the contamination area the contractor shall temporarily stockpile the excavated soil as close to the excavation as possible, but not so as to impede construction progress. The contractor shall be responsible for determining the location and size of the temporary stockpile within the contamination area. The size of the soil stockpile area shall be [as indicated] [____]; however, the contractor shall be responsible for determining the exact location of the soil stockpile area on the construction site. Therefor, except for an increase or decrease in tonnage of contaminated material, claim for additional compensation shall not be made regardless of the amount of effort or time required to handle or stockpile soil. The contractor shall take measures specified herein to prevent the contamination of adjacent areas at all stockpile locations and during earthwork operations.

1.4 BASIS OF BIDS, MEASUREMENT AND PAYMENT

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NOTE: Choose one of the following options. Choose the first option for lump sum bidding of contaminated soil removal and treatment, in projects where exact quantities can be practically determined prior to the actual work. Choose the second option for unit price bidding of contaminated soil removal

and treatment. Specify unit price bid items for contaminated soil removal and treatment for projects where exact quantities cannot be practically determined prior to the actual work.

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[Base bids on the quantity of contaminated soil indicated. Should the total quantity of contaminated soil vary from that specified as the basis for bidding, the contract price will be adjusted in accordance with "FAR 52.243-4, "Changes." The removal conditions specified and indicated describe conditions which are known. However, the Contractor is responsible for other conditions encountered which are not unusual when compared to the conditions recognized in the soil excavation business as usual in contaminated soil removal and treatment activities such as those required under this contract.]

[Payment will be at the contract unit price per metric Ton, multiplied by total metric Tons of contaminated soil removed and confirmed by the Contracting Officer. Base bids on total metric Tons of contaminated soil removed and treated[, as specified in the Bid Schedule]. Include a bid unit price per metric Ton of contaminated soil removed based on the quantity [as specified or indicated] [as specified in the Bid Schedule]. If the Contracting Officer requires an increase or a decrease in total volume of contaminated soil removed and treated, the contract price will be adjusted in accordance with the "FAR 52.211-18, Variation in Estimated Quantity." Contaminated soil conditions specified and indicated describe conditions which are known. However, the Contractor is responsible for other conditions encountered which are not unusual when compared to conditions recognized in the dredging business as usual in contaminated soil removal and treatment activities such as those required under this contract.]

1.4.1 Disposal of Stockpiled Soil

Payment will be at the contract unit price per metric Ton, multiplied by the total tonnage of stockpiled soil as specified in the Bid Schedule. Base bids on total metric Tons to handle, transport, and dispose of stockpiled soils from indicated areas of petroleum contaminated soils.

Bids shall be based on disposal of contaminated soil (TPH greater than 50 mg/kg and not failing the TCLP test) at a permitted sanitary or industrial landfill equipped with liners and leachate collection system or an approved TPH incineration facility off site in accordance with [Regional] [and] [local] regulations.

Measurements for payment will be determined by certified weigh tickets from the disposal facility. The measurement of a metric Ton shall be equal to 1000 kg.

1.4.2 Dewatering

Payment will be at the contract unit price per Liter, multiplied by total liters of petroleum contaminated water. Base bids on total liters for dewatering, sampling, testing, containerizing, and disposal of petroleum

contaminated water as specified in the Bid Schedule to an approved industrial waste treatment plant.

Bids shall be based on disposal of contaminated water at an approved industrial waste treatment plant.

Measurement for payment will be determined by certified metering equipment at the industrial waste treatment plant.

1.5 SUBMITTALS

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NOTE: Where a "G" in submittal tags follows a submittal item, it indicates Government approval for that item. Add "G" in submittal tags following any added or existing submittal items deemed sufficiently critical, complex, or aesthetically significantly to merit approval by the Government. Submittal items not designated with a "G" will be approved by the QC organization.

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Submit the following in accordance with Section 01330, "Submittal Procedures."

SD-06 Test Reports

Field Sampling test results

When required, analysis shall be performed by a laboratory approved by the local ASL for the specific tests to be made.

SD-07 Certificates

Excavation and Material Handling Plan; G

Site Health and Safety Plan; G

Field Sampling and Laboratory Testing Plan; G

1.6 QUALITY ASSURANCE

1.6.1 Certificates

1.6.1.1 Excavation and Material Handling Plan

A material handling plan shall be furnished by the Contractor 15 days prior to initiation of the work that describes phases of dealing with the contaminated soil and water including, but not limited to, a schedule to be employed in the excavation, a sequence of operations, the method of excavation, temporary containment and stockpile areas, dewatering method, type of containment used for water, hauling, proposed equipment, handling of the contaminated materials, soil and water testing requirements, and safety precautions and requirements.

1.6.1.2 Site Health and Safety Plan

Describe safety precautions for each phase of the project as specifically related to soil removal, dewatering operations and treatment operations. Identify safety equipment and procedures to be available and used during the project. Furnish the name and qualifications based on education, training, and work experience of the proposed Site Health and Safety Officer. Plan shall incorporate the requirements of D.L. 626, UNI 7546/2, and DOD-FGS-Italy. Site work shall not begin until this plan is approved by the Contracting Officer.

1.6.1.3 Field Sampling and Laboratory Testing Plan

Describe field sampling methods and quality control procedures. Identify laboratory and laboratory methods to be used for contamination testing. Sample reports shall show sample identification for location, date, time, sample method, contamination level, name of individual sampler, identification of laboratory, and quality control procedures.

PART 2 PRODUCTS

2.1 SOURCE MANUFACTURERS

2.1.1 Plastic Sheeting

The following manufacturers generally comply with these specifications:

ITALDRENI
Via Papa Giovanni XXIII
42020 S.Polo d'Enza (RE)
Tel: 0522-244211
Fax: 0522-244244
WEB Site: www.italdren.it

EIFFEL S.p.A.
Via Provinciale Ghiara, 35
43012 Fontanellato (PR)
Tel: 0521-829711
Fax: 0521-829777
WEB Site: www.eiffel.it

CROCCO S.p.A.
via Monte Ortigara, 37
36073 Cornedo Vicentino (VI)
Tel: 0445-428428
Fax: 0445-428338
WEB Site: www.crocco.com

2.2 PLASTIC SHEETING

UNI 10667-11.

PART 3 EXECUTION

3.1 PREPARATION

For excavation activities within the indicated areas of contaminated soil, concrete slabs and structures encountered above or below the ground surface, shall be removed, brushed to remove soil materials, and disposed of as non-hazardous waste as specified in Section 02220, "Site Demolition."

3.1.1 Safety Signage

Provide safey signs per UNI 7546/2 around work areas to be visible by workers prior to beginning work.

3.2 EXCAVATION REQUIREMENTS

Excavate contaminated soil only as necessary to construct facilities as indicated. Stockpile contaminated soils in a temporary containment area as specified herein and as indicted in the approved handling plan. Excavation outside the indicated contaminated areas can be handled and disposed of in accordance with Section 02315, "Excavation and Fill." Assume for bidding purposes that no contaminated soil will meet the "Hazardous" material criteria.

3.2.1 Temporary Containment of Excavated Contaminated Soil

3.2.1.1 Soil to be Reused as Backfill

Excavation and backfilling schedules shall be planned and executed to minimize the length of time stockpiling is required. Place excavated soil on top of 0.25 mm thick reinforced polyethylene sheeting, and provide continuous cover of 0.25 mm thick reinforced polyethylene sheeting on top of the stockpile. Temporarily stockpile the excavated soil as close to the excavation as possible, but not so as to impede construction progress. The contractor shall be responsible for determining the location and size of the temporary stockpile. Place stockpiles and sheeting in such a manner as to prevent depressions and ponding of water atop or adjacent to the stockpiles. Provide a straw bale berm around the outer limits of the stockpile and cover with polyethylene sheeting. Secure all sheeting such that high winds and rainfall will not displace and secure edges of the sheets with weights to keep the sheeting in place. All water runoff shall be diverted from the stockpiled material. Replace damaged and torn sheeting. The sheeting on the top of the stockpile shall only be removed when necessary to add or remove material and shall not be removed while raining. Excavated soil determined by the Contracting Officer at the time of excavation to be unusable for backfill (cannot be compacted due to high petroleum or moisture content) shall be transported to the indicated Soil Stockpile Area. The Contracting Officer shall be notified 3 days prior to excavation within the Contamination Area in order to schedule inspection of the operation.

3.2.1.2 Soil to be Disposed of

At the Stockpile Area the soil shall be tested and disposed of in accordance with the requirements specified herein. Place excavated soil on

top of 0.25 mm thick reinforced polyethylene sheeting, and provide continuous cover of 0.25 mm thick reinforced polyethylene sheeting on top of the stockpile. Place stockpiles and sheeting in such a manner as to prevent depressions and ponding of water atop or adjacent to the stockpiles. Provide a straw bale berm around the outer limits of the stockpile and cover with polyethylene sheeting. Secure all sheeting such that high winds and rainfall will not displace, and secure edges of the sheets with weights to keep the sheeting in place. All water runoff shall be diverted from the stockpiled material. Replace damaged and torn sheeting. The sheeting on the top of the stockpile shall only be removed when necessary to add or remove material; and shall not be removed while raining.

3.2.2 Excavation Procedure

Methods and equipment used to remove contaminated soil shall result in minimal disturbance to remaining soil beyond the excavation limits. Any materials that becomes contaminated as a result of the Contractor's operation shall be removed and disposed of at no additional cost to the Government.

3.3 DEWATERING REQUIREMENTS

Minimize the amount of dewatering required. Perform excavations during forecasted dry periods. Before beginning dewatering, ensure all material, equipment and labor is on-site and ready for construction. Use construction material which minimizes the requirement for dewatering. All manholes shall be precast where practical. Excavations below the water table shall not remain open for more than 4 days. Only dewater when necessary for construction. Containerize, test and dispose of all water removed during dewatering. Assume for bidding purposes, water can be disposed of at an approved industrial wastewater treatment plant in a manner that meets [Regional] [and] [local] regulations.

3.3.1 Dewatering

Groundwater flowing toward or into excavations shall be controlled to prevent sloughing of excavation slopes and walls, boils, uplift and heave in the excavation and to eliminate interference with orderly progress of construction. French drains, sumps, ditches or trenches will not be permitted within 900 mm of the foundation of any structure, except with specific written approval, and after specific contractual provisions for restoration of the foundation area have been made. Control measures shall be taken by the time the excavation reaches the water level in order to maintain the integrity of the in situ material. While the excavation is open, the water level shall be maintained continuously, at least 1000 mm below the working level. No contaminated water shall be disposed of on-site.

3.4 TESTING LABORATORY REQUIREMENTS

The Contractor shall submit to the Contracting Officer the names of all testing laboratories to be used to accomplish analysis of contaminated soil and water. The testing laboratory shall be performed by a certified

analytical laboratory. A maximum turnaround time of 5 days for sample analyses shall be required in accordance with the standard work week of the contract. Reports shall be provided to the Contracting Officer within 5 days of sampling.

3.5 TESTING REQUIREMENTS FOR DISPOSAL OF CONTAMINATED SOILS

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NOTE: EPA test procedures listed are generally recognized in Italy, although the local ASL may require minor variations of testing depending upon the project scope. Any different tests should be verified with local ASL's.

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a. One composite sample shall taken from each excavation site and shall be analyzed for each required test. To develop a composite sample of the size necessary to run the required tests, the Contractor shall take several samples from different areas within the soil pile. These samples shall be combined and thoroughly mixed to develop the composite sample.

b. The soil shall contain no free liquid as demonstrated by EPA SW-846 Method 9095, paint filter liquids test.

c. The sum of benzene, toluene, ethyl benzene, and xylene (BTEX) concentrations shall be determined by using EPA SW-846 Method 5030/8020, D.M. 471, and Law 426.

d. TPH concentrations shall be determined by using EPA 600/4-79-020 Method 418.1, which has been modified for use with soil, D.M. 471, and Law 426.

e. Material shall be tested for EOX (total organic halogens) in accordance with EPA SW-846 Method 9020, D.M. 471, and Law 426

f. Material shall be analyzed for Full TCLP in accordance with EPA SW-846 Method 1311 and for ignitibility, corrosivity, and reactivity, D.M. 471 and Law 426.

g. Material shall be tested for PCB's (polychlorinated biphenyls) in accordance with EPA SW-846 Method 8080, D.M. 471, and Law 426.

h. Moisture content of the sample shall be determined in accordance with EPA Method 160.3, D.M. 471, and Law 426.

i. Provide additional testing as required by treatment facility. Contractor is responsible for providing any additional tests as specified by the treatment facility.

3.6 CRITERIA FOR DISPOSAL APPROVAL FOR SOIL

As identified by the Contracting Officer:

a. Soils failing the TCLP Test shall be managed in accordance with Italian Regulations, DOD-FGS-Italy, and other requirements of Section 01575, "Temporary Environmental Controls". Payment for disposal of materials failing the full TCLP test shall be made in accordance with the "CHANGES" clause of the General Conditions.

b. Soils exhibiting a EOX.

c. Excavated soils meeting the requirements for fill on site as specified herein under "DEFINITIONS" shall be used as excavation backfill material.

3.7 TESTING REQUIREMENTS FOR DISPOSAL OF CONTAMINATED WATER

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NOTE: EPA test procedures listed are generally recognized in Italy, although the local ASL may require minor variations of testing depending upon the project scope. Any different tests should be verified with local ASL's.

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a. One sample shall taken from each container and shall be analyzed for each required test.

b. TPH (total petroleum hydrocarbons) concentrations shall be determined by using EPA 600/4-79-020 Method 418.1, which has been modified for use with water.

c. Material shall be analyzed for Full TCLP in accordance with EPA SW-846 Method 1311.

d. Material shall be analyzed for benzene, toluene, ethylbenzene and xylene (BTEX) in accordance with EPA SW-846 Method 8240.

e. Material shall be tested for PCB's (polychlorinated biphenyls) in accordance with EPA SW-846 Method 8080.

f. Provide additional testing as required by treatment facility. Contractor is responsible for providing any additional tests as specified by the treatment facility.

3.8 CRITERIA FOR DISPOSAL APPROVAL FOR WATER

As identified by the Contracting Officer, water failing the TCLP Test shall be managed in accordance with [Regional] [and] [local] regulations. Payment for disposal of materials failing the full TCLP test shall be made in accordance with ["FAR 52.243-4, "Changes."] ["FAR 52.211-18, Variation in Estimated Quantity."]

3.9 SAMPLING AND ANALYSIS

Provide sampling and analysis of petroleum contaminated soil and water as described in the following paragraphs. Provide Field Sampling test results

to the Contracting Officer within six working days of the sample collection.

3.9.1 Sampling and Testing of Soil

Take samples and test for TPH and BTEX for approximately every [100] [150] [___] metric Tons of composite soil. Take samples and test for full TCLP from one composite soil sample taken from excavated soil in contaminated areas. Soils that consistently register above level as specified herein under "DEFINITIONS" for on site contaminated soils shall be sampled and tested for disposal.

All stockpiled soil shall be placed in the temporary containment area indicated on the contract drawings and shall remain there until either backfilled or disposed of as specified herein.

Excavated soils shall be used as backfill if contaminants are below the limits specified for contaminated soils and as defined herein under "DEFINITIONS."

3.9.2 Sampling and Testing of Water

Take sample and test for full TCLP and BTEX for every container of water generated from dewatering operations. Water that registers above levels as specified herein under "DEFINITIONS" for on site contaminated water shall be handled in accordance with the test results. Water that does not register above the levels as specified herein under "DEFINITIONS" shall be sampled and tested for the remaining tests and disposed of at an industrial wastewater treatment plant.

3.9.3 Excavation Limits

Excavate only as necessary for facility construction.

3.10 SPILLS OF CONTAMINATED SOIL AND WATER

The Contractor shall use appropriate vehicles and operating practices to prevent spillage or leakage of contaminated materials from occurring during operations. All vehicles leaving the contaminated soil area shall be inspected by the Contractor to ensure that no contaminated soil adheres to the wheels or undercarriage. A layer of 0.25 mm thick reinforced polyethylene sheeting shall be placed under all areas that may become contaminated during loading operations to prevent contamination from leaching into clean soil. Contaminated soil piles shall be covered at all times when not being worked on to minimize erosion. All water resulting from dewatering operations shall be containerized. Handle and store containers prior to disposal in a manner to prevent spillage or contamination of adjacent area.

3.11 TREATMENT FACILITIES

Excavated petroleum contaminated soils and dewatering water shall be disposed of off site at a certified facility for disposal of petroleum that is contaminated soil and water. Provide disposal and documentation that material has been treated in accordance with D.L. 22 and D.M. 471.

-- End of Section --